F. R. Patch
10
Mfg. Co.

# Slate..... Roofs.

Third Edition.
1897.

# Three Questions.

**Why do manufacturers**

Of slate in other regions tack the name "Bangor" on to that of their quarry, slate or corporate title?

**Did you ever hear**

Of producers of "Genuine Bangor Slate" tacking the name of any other region on to that of their quarry, slate or corporate title?

**Is it not proved**

Conclusively by their use of the name "Bangor," that producers in other regions hold in the highest estimation and concede the highest reputation to Bangor Slate?

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# BANGOR EXCELSIOR SLATE CO.,

MINERS AND
MANUFACTURERS OF

## Genuine · Bangor..... Roofing · Slate.

**QUARRIES:**
ON THE FAMOUS OLD BANGOR VEIN,
**BANGOR, PA.**

**OFFICES:**
MAIN OFFICE: DRAKE B'LD'G, EASTON, PA.
NEW YORK OFFICE: 253 BROADWAY.
CHICAGO OFFICE: 402 NEW YORK LIFE B'LD'G.

JOHN GALT & SONS, SALES AGENTS.

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**All Communications should be addressed to**

**BANGOR EXCELSIOR SLATE CO.,**

DRAKE BUILDING,

**EASTON, PA., U. S. A.**

1897.

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Bangor ...

## WHAT IS SLATE?

It is generally said that slate is an "argillaceous rock of a peculiar structure which is readily split into thin plates." Put into plain English that means, it is a rock composed of clay which can be split into plates of any desired thickness. It is a product of nature found in what geologists call Cambrian, Silurian and Devonian formations and generally alternating with bands of grit and limestone, often containing streaks of lava or volcanic ashes. In color it is not always the same. Sometimes it is found in beds which are blue black, sometimes gray or green, purple, red or blue, according to the mineral deposits which have been at some time contiguous thereto. The material seems to have been specially adapted by nature for the purpose of roofing buildings and, that which is best known to commerce for the purpose, is fine grained, combining great durability and strength with moderate weight. Its density is such that experiments have shown it takes an average of 20,000 pounds to crush one cubic inch. It has been used for roofing during many centuries, and some of the old castles of North Wales—such as Carnavon and Conway—were covered with this material. Many of these ancient buildings in various parts of England and Wales, have slate roofs to-day, which are known to have lasted perfectly impervious to storm,

snow and rain for over two hundred years, and some have been on buildings for a time so long that "the memory of man runneth not to the contrary."

In the United States, particularly in Pennsylvania, New York, Maine, Vermont and Virginia, enormous beds of this natural deposit are found, some of which, being tilted up from their original horizontal, or nearly horizontal position, stretch across wide districts in a series of undulations, which rise to the surface in crests, or dip into troughs under ground and form angles of every inclination with the horizon. This is the case with the clay slate or slate of commerce from which roofing material is made, though the "generic" name "slate" is also given to many mineral substances which split easily, such as the bituminous rock found in coal measures, horneblende, mica, etc. This clay slate (argillaceous) is almost universally used for roofing material wherever it can be transported readily to the place where it is designed to use it and, as the facilities for transportation increase year after year and its superiority over all other material for the purpose is more generally known, the demand for it increases every day. With improved machinery for quarrying and hoisting, railroad facilities which bring the cars to the quarry bank, and better methods of handling, slate has now become so cheap as to compete with any kind of material for roofing purposes. It would surprise many who are not familiar with the subject to know at what comparatively little expense slate can be transported long distances.

## How Roofing Slate Are Made.

Slate lies in great beds in the earth, sometimes near the surface, but often twenty, thirty, forty or more feet below the surface. When the slate rock lies close to the surface it is generally brittle, and the greater the depth of clay above it the more likely it is to be of finer grain, tough and of a uniform color. When the top is removed and the beds uncovered, the slate is carefully blasted out in huge blocks by means of small charges of powder, placed in holes which are drilled at right angles to its cleavage. These blocks, which vary in size from one to three or more tons, are then hoisted to the quarry banks and there are distributed to skilled workmen who split them into smaller blocks for convenience of handling. Then they go to another set of workmen who split them to a thickness of about five to an inch and, using a guage and a knife, which is worked by a treadle for the purpose, cut them to the size required. Then they are piled on roofing lath, inspected carefully by a competent inspector, imperfect ones are thrown out and they are counted into hundreds so that they can be readily reckoned into squares for shipment—a square being a number sufficient to cover ten feet square (one hundred square feet) on a roof, allowing a three-inch lap. In counting and piling them they are kept carefully on the edge, with laths between each course in the pile.

It is worth the while of any one who takes an interest in the progress of great natural industries to visit the Bangor slate region and its chain of quarries, and watch the process of

quarrying and manufacturing slate. The improved appliances in use, the better methods of quarrying that have been adopted, the skillfulness with which men trained from childhood split the huge blocks into slabs convenient for handling, and the final and marvelously dexterous process which converts them into roofing slate, are all interesting to an intelligent observer, while the vast extent of the slate deposits here reaching to an unknown depth in the bowels of the earth, will serve to give the uninitiated some faint idea of the magnitude of Pennsylvania's wealth in this article of commerce.

## Its Superiority For Roofing.

The superior qualities of slate as a roofing material are manifold. They embody in a leading degree the conditions of strength and elasticity, are non absorbent of moisture, and are able to resist the most trying atmospheric extremes. These features alone are a sufficient recommendation to builders seeking a covering that will afford the full protection desired, in conjunction with durability, far beyond that obtained through the use of any other roofing material. And slate possesses still further natural attractions in the way of beauty and utility. The great increase in the demand for slate for roofing material in the last few years, shows that it is rapidly superseding all other roofing material. It makes unquestionably the best as well as the cheapest roof, as the following table will show:

| *Material.* | *Average Life.* |
|---|---|
| Good slate | 90 years |
| Good tin | 25 years |
| Good shingles | 15 years |
| Good corrugated iron | 10 years |

And while the first cost of a slate roof may be a trifle more than a roof made from either of the other materials, it will readily be seen by the above table that it would be equally as cheap, considering the life of these various materials, to use slate were it almost four times the cost of tin, six times the cost of shingles and nine times the cost of iron.

## Advantages of a Slate Roof.

When a man decides upon material to use for roofing his building, the question of cost is, of course, one of the first that presents itself, and, while the first cost of a slate roof may be slightly higher than that of some other roofing material that lacks the same advantages, yet, when we consider the safety of the building from fire and the consequent lower rates of insurance, the cleanliness and durability of slate, there can be no question that it is practically the cheapest as well as the best roofing material that can be used.

Snow will not adhere to a slate roof but will melt and run off, while it remains frozen to a shingle or tin roof, often long enough to endanger the building—rotting woodwook and corroding metalwork with which it is in contact. Slate is impervious to snow or rain, is unaffected by flying sparks which readily ignite a shingle roof and often cause a slight fire to spread into a conflagration wholly beyond control. A

slight breeze keeps a slate roof free from dust which gathers on shingles. On a shingle roof moss will grow and on a tin or iron roof rust will gather, which is an evidence of their decay. Every few years a tin roof must be painted, which is a serious item of cost. A roof covered with good slate properly put on will last as long as the building, and necessitates no expense for painting or any other aid to preserve it.

Slate has the advantage over all other roofing materials in that it may be taken off in case of remodeling a building and used again.

Water from a slate roofed building, if allowed to run into a cistern (after the first shower has washed the slate), is the purest and best water that can be used for drinking. Allowed to run off from buildings into tubs or barrels, it serves for watering cattle or horses, and the beasts will drink it in preference to any other. The same water run off a painted tin roof or a shingle roof on which moss or dirt has accumulated is tainted and not fit for man or beast to drink. Where rain water is utilized for drinking purposes the superiority of the slate roof is so apparent that no argument is needed.

## Buildings Adapted for Slate.

There is an erroneous impression that only brick and stone buildings should have a slate roof, but as the number of frame buildings with slate roofs increases, and their beauty and additional safety from fire is better known and more widely appreciated, that impression is rapidly disappearing. Houses are no longer built with such frailty in their construction that

they cannot support a slate roof, and, when such a roof is rejected for lack of stability in the building, it is a dangerously frail structure to use. Frame buildings with slate roofs are the rule and not the exception nowadays, and the reason is that the superiority of the slate roof over all others is very generally acknowledged. It may be said generally that every building should have a slate roof. It is not only that such a roof is absolutely impervious to the weather but it is also the safest, the most beautiful and the roof that in the event of an accident is most easily and satisfactorily repaired. A new slate to replace a broken one makes a slate roof just as good as ever and it can be put in place in a few minutes. Old shingle roofs are often covered with slate without removing the shingles, thus saving the expense and exposure incurred by removing the old roof.

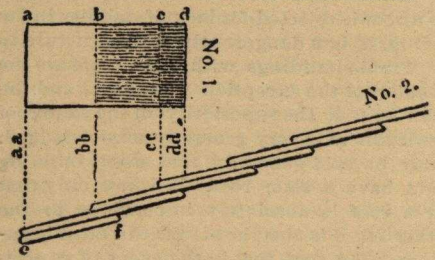
## Shipping Slate.

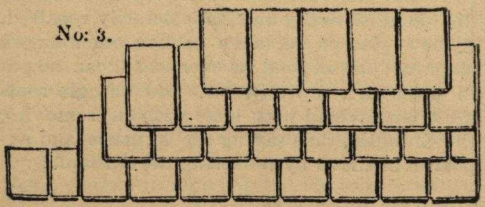
It is important to our customers to know that 40 to 50 squares of slate constitute an ordinary car load, and the least quantity that can be shipped at car load rates is 37 squares. If it is necessary, any quantity not exceeding 90 squares may be loaded in a car. In loading, care is taken to pile the slates on edge, two rows deep, and separate them by building laths.

All freight charges are based on 650 pounds to the square.

In less than car load lots the cost per square for freight is about double the cost in car loads.

## How Slate Are Put on the Roof.




In slating as in shingling, we commence at the bottom and work up. By reference to diagram No. 2, it will be seen at *e, f* that the slate in the first course are short; that they are covered by the second and overlapped by the third course, &c. This overlapping as shown at *cc, dd*, diagram No. 2, is continued, and is termed by slaters the "lap." If it covers a space of three inches, it is called a three-inch lap; if four inches a *four-inch lap*, &c.

The length of the slates in the first course is governed by the length of the slates selected for the roof, and is ascertained in the following manner: For example, figure No. 1 may represent a slate 20 by 10; allowing three inches for

lap (*c*, *d*), 17 inches remains, which are equally divided at *b*, leaving 8½ inches *a* to *b* exposed to the weather; to produce the lap at *bb*, the first course would require slate 11½ inches in length. The rule for lap takes three inches from every slate, without regard to length, as shown at *c*, *d*, No. 1. By dividing at *b*, we determine the width of the courses (*aa*, *bb*, *cc*); and consequently, by adding the lap (three inches), the length of the slates required for the first or under course, *e*, *f*, is ascertained. As the work approaches the ridge, the proper width for the last course may require a little variation in the lap. The openings in the roof may be secured with lead or copper. The coping for the ridge is formed of sheet lead or zinc.

A steep roof is best for slates; we do not advise a less pitch than 3 inches per foot.

To start a slate roof first use ceiling lath by nailing them fast to the eaves. To start the first row by laying a slate crosswise is a bad practice and should be avoided, as the grain runs the wrong way and the slate is liable to break and the lower half fall out—a fact of which all practical slate roofers are aware.

It is a fact that any building strong enough for a shingle roof, and properly called a safe building, is strong enough for a slate roof.

For a plain roof, the length of the roof is multiplied by the length of the rafters to get at the measure for slate roofing. The shingle flashing should be laid in with the courses of slate, one piece under the lower end of the first slate or half slate intersecting any wall or chimney, and should be two inches longer than the gauge of the slate and six or seven

inches wide. There should always be a wood back put in, two or four inches higher in the centre of every chimney, so that the tin or other covering may have a good fall to carry the water clear of the chimney. A good slater always insists that tinners, carpenters and others who may have occasion to cross the roof shall lay boards or ladders to walk on. Tinners, carpenters, painters and lightning rod men often damage slate roofs more before the building is finished, than ten years of wear will damage them. Sheathing boards should be even in thickness so the slate may lay smooth and even. Boards surfaced to a thickness are the best and should be perfectly sound so that nails may retain a firm hold. They should be narrow boards and thoroughly seasoned in order that they may not warp or shrink and so displace the slate.

Another good support for slate is lath about 2½x1¼ inches, and it may be of either hard or soft wood. If hard wood is used, it is better it should be unseasoned and the lath laid on the rafters as far apart as the courses of slate will lay to the weather. Lath costs much less than sheathing, and can never shrink or warp enough to throw the slate out of place.

The nails used should be galvanized, tinned or wire nails to prevent rusting.

Often in handling slate, much loss is occasioned by not piling it carefully. Roofers might learn something to their advantage if they saw how carefully slate is piled on the edge at the quarries. Slate should never be laid on its flat side in a pile higher than the width of one slate, and they should never be piled on the flat side to haul.

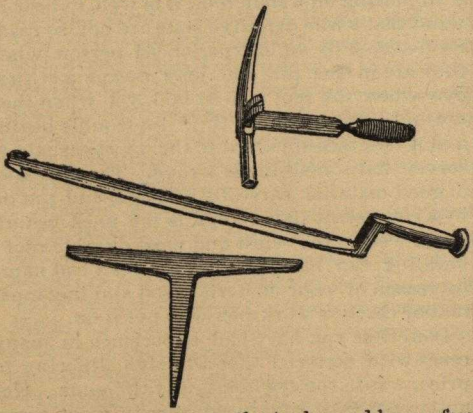
In selling a square of slate, manufacturers allow three inches for lap, and it is the business of an architect to see that the roof is laid with that much lap. A dishonest roofer may gain considerably by laying the roof with a less amount of lap than three inches, but in so doing he will endanger the weather proof qualities of the roof. The average weight per square of slate is 650 pounds, and the average thickness of a roofing slate is 1-5 of an inch.

In putting on a slate roof, it is well to bear in mind that while defective slate are not so readily detected by an inexperienced person when they are in the pile and may escape a critical eye when the roof is first laid, yet when they are on the roof a short time the trouble begins and it becomes apparent to the most casual observer that something is wrong. The slate roof of good material, carefully selected, and put on by a competent slate roofer, is the most beautiful as well as the safest and most durable roof a building can have, but it may get a bad name by reason of poor material used and incompetent or careless workmen who put it on.

Doubtless you have had experience in many cases with material that although differing in price, was to the eye identically the same. Has not experience convinced you, in most cases, that the more expensive article was really the cheaper in the end? Did you not receive better value for your money? With slate roofs it is the same. A good slate roof, properly laid, will last as long, and in most cases longer than the building itself, and needs no repairs. The good roof and the poor one may have the same outward appearance when first laid, but the test of

time will show that the poor roof is decidedly the more costly in the end. The transportation being the same in either case, and taking into consideration the extra expense and the time consumed in the laying of poor slate that will be occasioned by breakage and other defects, not to speak of the unsightly appearance of the roof, do you not think it will pay you to use the best—the GENUINE BANGOR EXCELSIOR SLATE.

## Tools Used in Slate Roofing.

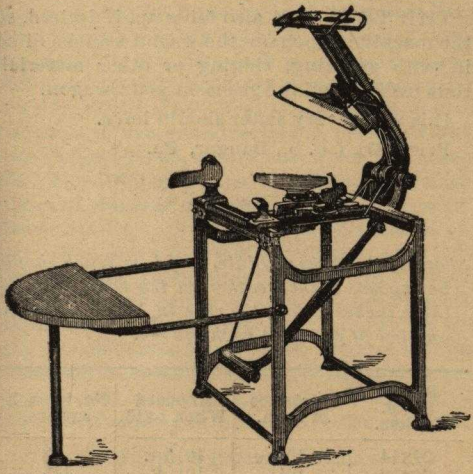


The above represents the tools used by roofers in putting on a slate roof—a hammer, ripper and stake. The tools manufactured by us are made by hand from the best saw steel and the set costs $5.50. We will ship the set or any one of these tools to any address in the United States or Canada on receipt of prices:

| | |
|---|---|
| Hammer | $3 00 |
| Ripper | 1 75 |
| Stake | 75 |

## Slaters' Machine

**For Punching and Cutting Slate to Pattern.**



Will cut octagon, hexagon, diamond or any other desired angle. Also two sets of circle knives to cut convex and concave. For ornamental work it is indispensable and will cut and punch any sized slate from 6 to 16 inches wide and from 12 to 28 inches long, and has on the bed plate figures to represent the various sizes of slate so that an inexperienced hand can set the machine to cut and punch to standard gauge.

THE SEAT is a great convenience, as it holds the operator and machine in the proper relation to each other, and saves the time and trouble of hunting up a keg or block to sit on. The seat

folds up when not in use or for transportation and requires no extra space.

THE TREADLE also folds up, if desired, so the machine when on the wagon can be filled in with spouting, ridging or other material, thus utilizing all the space on your wagon.

It is what every slater should have.

Price, $30, f. o. b., Bangor, Pa.

## Table.

*Showing the Sizes of Slate, and how much should be exposed to the weather on the roof, allowing three inches to lap, the rule in lathing, and the number of pieces in each square.*

| Size of Slate. Inches. | Distance of Lath. | Exposed When Laid. | No. in each square. |
|---|---|---|---|
| 24x14 | 10½ | 10½ in. | 98 |
| 24x12 | 10½ | 10½ " | 115 |
| 22x12 | 9½ | 9½ " | 126 |
| 22x11 | 9½ | 9½ " | 138 |
| 20x12 | 8½ | 8½ " | 142 |
| 20x10 | 8½ | 8½ " | 170 |
| 18x12 | 7½ | 7½ " | 160 |
| 18x10 | 7½ | 7½ " | 192 |
| 18x 9 | 7½ | 7½ " | 214 |
| 16x12 | 6½ | 6½ " | 185 |
| 16x10 | 6½ | 6½ " | 222 |
| 16x 9 | 6½ | 6½ " | 247 |
| 16x 8 | 6½ | 6½ " | 277 |
| 14x10 | 5½ | 5½ " | 261 |
| 14x 8 | 5½ | 5½ " | 327 |
| 14x 7 | 5½ | 5½ " | 374 |
| 12x 8 | 4½ | 4½ " | 400 |
| 12x 7 | 4½ | 4½ " | 457 |
| 12x 6 | 4½ | 4½ " | 533 |

## Different Qualities of Roofing Slate.

If the average citizen attempted to give a definition of what he understood to be "Slate," he would most probably describe a piece of roofing material, or a slate such as school boys use. But slate not only includes many other varieties of rock than the clayey slate of commerce, but that argillaceous substance is, itself, divided into various kinds, as are limestone and granite. The different kinds of roofing slate have different degrees of merit which are readily discernible to a practical roofer of experience, but which to the inexperienced are not so readily apparent. Assuming that they are all alike "roofing slate," and that the difference in price marks no material difference in quality, an inexperienced person may easily make a serious mistake by selecting the least costly and learning, when it is too late to repair his error, that the lowest in price is not always the cheapest.

## Genuine Bangor Slate.

This slate is from the world famous "Bangor region." and is generally acknowledged to be the best in the world. It is quarried at Bangor, Northampton county, Pennsylvania, U. S. A., has stood the test of use for more than forty years and slate that have been on a roof that length of time are apparently as good to-day as the day they were put on. It has been sold in London and Liverpool, England, in competition with the best Welsh slate and given perfect satisfaction. It is used almost invariably for government buildings in the United States, and makes a handsome roof of uniform color, that is practically indestructible.

## No. 1 Genuine Bangor Ribbon.

These slate are made from the same material as the No. 1 Bangor, but they contain parts of different beds, which occasions the streaks or "ribbons" running across the upper end of them. These streaks or ribbons are the dividing lines between the beds, whereas the No. 1 Bangor are made *between the ribbons.* These ribbons are completely covered, on a roof, by allowing a three-inch lap, so that a roof of these slate has the same beautiful, uniform appearance as a No. 1 Bangor roof.

If a person desires a good, strong, handsome roof and does not care to pay the price of No. 1 Bangor, he can get it by using No. 1 Bangor Ribbon, and he will have a stronger and better roof than one made from what is commonly known as No. 1 Pennsylvania Black Slate.

Many from ignorance, and others from self-interest, claim that this slate will rot and give way in the ribbon. This is not true. Mr. John Galt, who has had forty years experience in the slate business, and twelve years as a practical slate roofer, covered roofs with ribbon slate thirty years ago which are as good now as the day they were put on. He says, after having handled and used all the different kinds of slate now produced, that "there is no better or stronger slate than Genuine No. 1 Bangor and No. 1 Bangor Ribbon, and a building covered with these slates has a roof which is, to all intents and purposes, indestructible."

## The Name "Bangor."

Many slate producers of other regions testify

to the superiority of Genuine Bangor Slate by adding the name "Bangor" to their slate or corporate title. There never was an instance known of a Bangor slate firm adding the name of any other region to their own. These are facts which speak conclusively of the estimate in which the production of the Bangor region is held by slate men in other regions, and show why the name "Bangor" does not always prove that the slate to which it is given is quarried in the Bangor region. To the experienced eye of the practical quarryman who is acquainted with the strata of the various regions, real Bangor slate is known as soon as it is seen, but, in order to avoid mistakes which lead to disappointment, and to prevent deception, each invoice of GENUINE No. 1 BANGOR EXCELSIOR SLATE and GENUINE No. 1 BANGOR EXCELSIOR RIBBON SLATE will be accompanied by a certificate, a fac-simile of which is printed on page 22 in this book, signed by the Inspector of the Bangor Roofing Slate Manufacturing Association, and have stamped across its face "Shipped from BANGOR EXCELSIOR SLATE QUARRIES."

## The Bangor Excelsior Quarries.

We are one of the largest, if not the largest, producers of Genuine Bangor Roofing Slate in the United States, at our Bangor Excelsior Slate Quarries, operated by Mr. R. S. Brown, whose offices are Rooms 12, 13, 14 and 15 of the Drake Building, on South Third Street, Easton, Pa., U. S. A. The quarries are located on the famous Old Bangor vein, in the heart of the Bangor region, and contain the finest beds of roofing

And our facilities for prompt shipment are unsurpassed. We frequently have cars loaded within an hour after they are placed on our tracks. We shall be glad to furnish delivery prices f. o. b. cars at any railroad station in the United States or Canada on application, and mail free a small sample of our slate showing color, quality, etc., if desired.

## The Certificate.

The above is a fac-simile of the certificate which is properly filled out and signed by the Inspector of the Bangor Roofing Slate Manufacturers' Association, and has stamped across its face "Shipped from BANGOR EXCELSIOR SLATE QUARRIES," and accompanies each invoice of Genuine No. 1 Bangor Excelsior and No. 1 Bangor Excelsior Ribbon roofing slate. The customer then knows certainly that the slate he received are Genuine Bangor Excelsior Slate. Insist upon contractors producing this certificate.

Many long years ago our ancestors found that

it did not pay, in the long run, to purchase inferior goods of any description. Their experience crystalized into the proverb, "The best is the cheapest." There is the wisdom of the ages in that proverb, and we say, as our last word in this little book (which we hope will be useful to the reader), THAT THERE IS NO SLATE MADE FOR ROOFING PURPOSES THAT EXCELS THE GENUINE BANGOR EXCELSIOR ROOFING SLATE. That is why the name "Bangor" is adopted by many whose quarries are located elsewhere. There is no slate made that can excel in quality, finish and carefulness of selection, that which is shipped by

**The Bangor Excelsior Slate Company,**

R. S. BROWN, Proprietor,
DRAKE BUILDING,
Easton, Penna., U. S. A.

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# Facts.

That it costs as much to lay poor slate as good.

That the breakage in poor slate is enormous.

That the freight on poor slate is the same as on good.

That a roof made of poor slate needs continual repairs.

That a roof made of good slate lasts a lifetime without repairs.

That to have the best roof use GENUINE BANGOR EXCELSIOR SLATE.

TD CAT 1897 Bangor Excelsior...
ATHENAEUM OF PHILADELPHIA

BANGOR
EXCELSIOR
SLATE
TRADE MARK